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GENERAL NOTES.

BOTANY.¹

VARIATIONS IN THE GROWTH OF VIRGINIA CREEPER AND HICKORY.—It is well known that no two plants ever grow exactly alike, though these variations are often very slight. Two instances have come under my observation which have interested me very much, though they may be familiar enough to botanists. The first relates to our beautiful indigenous climbing shrub, the Virginia Creeper (*Ampelopsis quinquefolia*), several of which I have transplanted from the neighboring forest to the grounds about my residence. Some of these specimens are very free growers, climbing a dozen feet during a season, having joints three to four or five inches long, and large widely expanded leaves; the tendrils in these are very long and similar to those of the wild grape. Others have very different habits of growth; the joints are quite short, not more than one to two inches long, and the growth of the whole plant is very slow as compared with the first-mentioned variety. The tendrils, too, are very short. In some instances the stems send out aerial roots which burrow into the bark of the supporting tree, after the manner of the Poison Ivy (*Rhus toxicodendron*). The long-jointed free-grower never sends out these aerial roots, but depends for its support upon its tendrils which soon become dry and hard, and as tough as little wires.

The other instance refers to our common shellbark hickory (*Carya alba*). In the spring some of the trees may be seen with bursting buds and even expanding leaves while the buds of other trees standing close at hand are dormant and remain so for many days. In autumn these differences are also quite as marked; the leaves on some of the trees ripen and shrivel up even some days before any frosts, turning to a dark gray or slate color. Upon other trees the leaves continue green until the first frosts; they then turn yellow, with something of the same beautiful tints of the hard maple, and remain so until the heavier frosts completely dissipate their golden glories.—*Chas. Aldrich, Webster City, Iowa.*

THE COMPOSITÆ—Dr. Gray, in his last "Contributions to North American Botany," issued September, 1880, from the Proc. Am. Acad. Arts and Sciences, takes a considerable space to speak of "some of the results already reached" in the elaboration of the Compositæ for the forthcoming "Synoptical Flora of North America." As the portion of that work in which this order will be included cannot be published for some time, it may be well to sketch the more important of these results. Under the genus *Venonia*, the species *V. altissima* of Nuttall, long considered to be a variety of *V. fasciculata*, is restored to full specific rank. Elliott's name, *Eupatorium parviflorum*, gives way to Hooker's *E.*

¹ Edited by PROF. C. E. BESSEY, Ames, Iowa.

ambiguum. The genus *Aplopappus* is greatly extended, including the old genera *Prionopsis*, *Eriocarpum*, *Pyrrocoma*, *Homopappus*, *Sideranthus*, *Isopappus*, *Stenotus*, *Ericameria* and *Macronema*. The five species of *Aphanostephus* and the seventeen species of *Townsendia* are briefly characterized, and a systematic synopsis is given in each case. In discussing the genus *Erigeron* the author says: "It can be limited only by taking into account a combination of characters, and insisting here upon one, and there upon another." *Aster graminifolius*, of Gray's Manual, is hereafter to be known as *Erigeron hyssopifolius*. *Erigeron vernum* is likewise changed to *E. nudicaulis*. The genus *Aster* is accepted in the wide extent assigned it by Bentham and Hooker in the *Genera Plantarum*. The revision of this genus is not yet completed, but enough has been done to indicate that there will be but little change made in it as we have known it in Dr. Gray's works heretofore. The remainder of the order is still to be revised.

THE SENSITIVENESS OF THE ROOT-TIP OF THE SEEDLING.—We believe that there is no structure in plants more wonderful, as far as its functions are concerned, than the tip of the radicle. If the tip be lightly pressed or burnt or cut, it transmits an influence to the upper adjoining part, causing it to bend away from the affected side; and what is still more surprising, the tip can distinguish between a slightly harder and a softer object by which it is simultaneously pressed on opposite sides. If, however, the radicle is pressed by a similar object a little above the tip, the pressed part does not transmit any influence to the more distant parts, but bends abruptly towards the object. If the tip perceives the air to be moister on one side than the other, it likewise transmits an influence to the upper adjoining part, which bends toward the source of moisture. When the tip is excited by light, the adjoining part bends from the light; but when excited by gravitation, the same part bends towards the center of gravity.—*Darwin's "The Power of Movement in Plants."*

INFLUENCE OF LIGHT ON THE RESPIRATION OF SEEDS.—Planchon read a paper before the Paris Academy of Sciences, at its meeting on Nov. 22d, detailing experiments upon this subject. The experiments were made on the castor-oil plant and the bean (*Phaseolus*). As in previous experiments, a good deal more oxygen was observed in light than in darkness. The castor-oil seeds exhale slightly more CO_2 in darkness than in light, but the opposite was the case with the seed of the bean. In darkness the ratio of CO_2 to O was for the bean at least one-third superior to that for the castor-oil plant, but prolongation of the experiment tends to bring the relation equal to unity, whatever the original value. For a given quantity of oxygen absorbed, the seed placed in darkness exhales more CO_2 than that kept in light. While in light there is always less CO_2 exhaled than oxygen absorbed, the

contrary occurs in darkness. These facts explain the transformation of legumin into asparagin.—*Nature*.

BOTANICAL NOTES.—In recent numbers of *Nuovo Giornale Botanico Italiano*, Caldesi has been publishing a catalogue of the plants of Fænza and vicinity. It is fully annotated and contains many references and synonyms. There are many names in the list which are familiar to even local botanists in this country, as witness the following: *Asclepias cornuti*, *Calystegia sepium*, *Scrophularia nodosa*, *Veronica anagallis*, *V. officinalis*, *Brunella vulgaris*, *Typha latifolia*, *T. angustifolia*, *Funcus effusus*, *F. bufonius*, *Eleocharis palustris*, *Phragmites communis*, *Poa pratensis*, *P. compressa*, *Equisetum arvense*, *E. palustre*, *Adiantum capillus-veneris*, *Pteris aquilina*, *Polypodium vulgare*, etc. Among the weeds are the following familiar names: *Panicum crus-galli*, *P. sanguinale*, *P. glabrum*, *Setaria glauca*, *S. viridis*, *Urtica dioica*, *Amarantus retroflexus*, *Chenopodium album*, *Verbascum thapsus*, etc. Many plants which with us are cultivated for their flowers, or for other purposes, find a place in this catalogue as wild or naturalized species, e. g., *Euphorbia cyparissias*, *Iris germanica*, *Colchicum autumnale*, *Hyacinthus orientalis*, *Ornithogalum umbellatum*. A new species of Orobanche (*O. pelargonii*), is described; it is parasitic upon *Pelargonium inquinans*. The glumaceous plants are very unequally divided between the sedges and grasses, there being but twenty-one of the former, while of the latter there are no less than ninety-eight.—A new Alga is described and figured in the November number of the same journal by Borzi. It is regarded as the type of a new genus, *Hauckia*, related to *Cosmocladium*. The cells, which are two and two, are in the ends or sides of hyaline erect or curved stalks. Each cell by fission produces two daughter cells, and the latter develop hyaline stalks, thus giving rise to a repeatedly bifurcating mass. Macro and micro-zoöspores are also produced by the successive division of certain cells into two, four and eight parts, each provided with two vibrating cilia. No conjugation has been observed; on the contrary, both forms of zoöspores were seen to germinate. The species is named *Hauckia insularis*.—According to a correspondent of the *Gardener's Monthly*, *Caladium esculentum* has escaped from cultivation in some portions of Texas, and run wild.—E. W. Greene describes several new species of plants from New Mexico in the January *Botanical Gazette*.—In the same journal J. Schenck records his observations upon seventeen chestnut trees in Wabash county, Ill., which were planted many years ago by the early settlers. Where the trees are in groups of two or more they have invariably been fruitful, but whenever they are isolated they as a rule produce nothing but empty burs, indicating that the flowers need to be cross-fertilized *from tree to tree*.—In recently excavating a dock at Bombay, India, a forest bed was found composed of 382 trees, of which no less than 223

were in a standing posture. The largest tree was forty-six feet long and four feet and a half in circumference. The trees were generally found in a dark loamy soil composed of the disintegrated underlying rocks at a depth varying from low-water mark, to sixteen feet below low water.—It is encouraging to notice the improved facilities for botanical study and teaching in our colleges. At Michigan Agricultural College, a building 46 by 66 feet, and two-stories in height was erected in 1879, for the department of botany. The large lecture-room, 44 by 48 feet, is provided with tables for laboratory uses also. A large room on the second floor is designed for the herbarium and cabinet. At the Iowa Agricultural College new and more commodious rooms were provided for the botanical department by the erection of North Hall, in 1880. A large lecture-room is supplemented by a laboratory adjacent to it. The latter is constructed with north and east windows for microscopic work. A third room of ample size is set apart for the herbarium and cabinet.—Ten new species of *Carices* are described in the recently published second volume of the "Botany of California," by Wm. Boott, who contributed the article on *Carex*.—M. E. Jones in an article on the wild fruits of Utah, in Case's *Botanical Index*, mentions fourteen species; among these is a curious wild peach which grows in the sand and on lava beds. A wild gooseberry, *Ribes divaricatum*, var. *irriguum*, and a raspberry, *Rubus leucodermis*, would probably be hardy in the Eastern States; their fruits are described as delicious.

ZOOLOGY.

DREDGINGS IN THE BAY OF BISCAY.—The following are some of the more important results to which M. A. Milne Edwards directs attention. The Crustaceæ were, he says, extremely interesting; not one of the specimens dredged is also littoral in habitat, and it seems as though there were two faunæ placed one above the other, and not mixing. He forms a new genus, *Scyramathia* to contain *Amathia carpenteri* and *Scyra umbonata*; a crab with phosphorescent eyes was found at various depths between 700 m. and 1300 m. (*Geryon tridens*); this has been already seen in the Norwegian seas. *Munida tenuimana*, with large and phosphorescent eyes was not rare. *Gnathophausia zœa*, which has only as yet been collected by the *Challenger* (off the Azores and near Brazil) was also met with.

Most of the Mollusca belong to the deep-sea fauna of the North Atlantic and of the Arctic seas. Among the Mediterranean forms, there were some which as yet have only been found in the fossil state. The similarity of the deep-sea fauna at different latitudes is very strikingly shown by this collection. Pteropoda were taken from all depths; indications of Heteropoda were not absent. A short list of the more important Mollusca obtained is given by M. Milne Edwards in a foot note.